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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,676	10/23/2001	Yeong-Taeg Kim	SAM2.0002	3180

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EXAMINER

YENKE, BRIAN P

ART UNIT PAPER NUMBER

2614

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/001,676

Applicant(s)

KIM ET AL.

Examiner

BRIAN P. YENKE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Response 18 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 10-15, 19 and 22 is/are rejected.
- 7) ☒ Claim(s) 4-6, 8, 9, 16-18, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The examiner is providing a new Non-Final rejection based upon the previous rejected claim 11. Claim 11 is still being rejected under 35 USC 102, however with additional language supporting the anticipation of the limitation.

The applicant's arguments with respect to the remaining claims, were found unpersuasive as answered by the examiner below in the new grounds of rejection.

The examiner has withdrawn the provisional rejection under 35 U.S.C. 102(e) (with copending 10/003391) since as applicant states both applications were derived from the same inventors assigned to the same entity.

The examiner has also withdrawn the provisional double patenting rejection (with copending 10/003391) since the conflicting claims (1-3, 6-14 and 16-19) have been canceled from the copending application. Applicant's arguments with respect to previously rejected (double patenting) claim 4 was found persuasive and thus the rejection has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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2a. Claims 1, 2, 10-14 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Jiang et al., US 2002/0027610.

In considering claims 1 and 13,

a) the claimed inputting a video signal... is met by input 101, which are an interlaced video signal (Fig 1).

b) the claimed computing a frame difference signal... is met by pixel difference unit 107, which takes the luminance value differences of pixels in prescribed fields (Fig 3, page 2, Para 23).

c) the claimed forming a point-wise motion detection signal... is met by motion detection 109 (Fig 1), which computes the motion metrics, where as shown in Fig 3, can be motion about a point (i.e. Δc , Δn and Δs (page 2, para 22—27).

d) the claimed computing a region-wise motion detection signal... is met by motion detection 109 (Fig 1), which computes the motion metrics, about a region utilizing the point detected motion (i.e. Δa (page 2, para 24, and computing a max/min of the region utilizing the computed motion about a point.

e) the claimed forming from the region-wise motion detection signal a motion decision value... is met by spatial median filter 110 and LUT 11, where the motion metrics computed by motion detector 109 are filtered via spatial median filter 110 and then LUT 111 obtains the weight (blending factor), for frame or field interpolation.

In considering claims 2 and 14,

The claimed low-pass filtering the difference signal prior to the step of forming the point-wise motion detection signal is met by LPF 108 (Fig 1).

In considering claims 10 and 22,

- a) *the claimed spatially interpolating a value of the video signal...* is met by frame interpolator 105 (Fig 1)
- b) *the claimed temporally interpolating the value of the video signal...* is met by field interpolator 106 (Fig 1).
- c) *the claimed forming a motion decision value...* (refer to rejection of claims 1 and 13 above).
- d) *the claimed mixing an output signal...* is met by alpha blender 112 (Fig 1) where the blending of the video signal is based upon the motion value determines the blending of the field and/or frame interpolation (page 3, Para 40-44).

In considering claims 11 and 12,

Jiang discloses that based upon the motion metric value which may take on a value between 0 and 8, is used in determining the blending factor (motion decision value) which varies between 0 and 1 (page 3, Para 42) based on the interpolation methods. As shown in Fig 5, when there is little or no motion (motion metric value = 0-4) the field (temporal) interpolation is used, where there is high or maximum motion (motion metric value = 5-8) the frame (spatial) interpolation is used. Thus the motion decision value (i.e. blending factor) is varied between 0 and 1 based upon a motion metric value between 0 and 8.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3a. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Jiang et al., US 2002/0027610 in view of Taubman, US 6,122,017.

In considering claims 3 and 15,

Regarding the matrix of coefficients for the LPF. Jiang discloses a LPF 108 which is used to smooth the pixel luminance value differences. However, Jiang does not explicitly disclose the LPF being defined by a matrix. Jiang does disclose computing various (Fig 3) pixel luminance value differences in order to determine the motion for each missing pixel and then interpolating the missing lines to create a progressive field (from the interlaced signal).

It is noted by the examiner that a filter, which is defined by a matrix/kernel, is conventional in the art. Since a filter based upon the application, can be weighted (number of taps, coefficients) according to the input (based on position, size, etc) in order to provide a predetermined output.

Based upon applicant's traversal the examiner will incorporate Taubman which discloses the use of a 3 tap horizontal LPF kernel (kernel is synonymous with matrix).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jiang which discloses a LPF in smoothing out the

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differences between various differences on pixels in various locations, to utilize a LPF defined by a matrix to filter the respective differences by a predetermined factor (i.e. selected number of taps/coefficients), to provide a smoothed signal based upon it's relevance to the missing pixel.

3b. Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Jiang et al., US 2002/0027610 in view of Taubman, US 6,122,017 and Gowda et al., US 6,275,259

In considering claims 7 and 19,

Regarding the use of a LPF to filter the region-wise motion detection signal prior to outputting.

Jiang does disclose the use of a LPF 108 (Fig 1), however the combination of Jiang/Taubman does not explicitly disclose the use of a LPF prior to outputting.

However, the use of a filter (LPF), which is used to filter a signal, whether at the input, output or in-between is a matter of design choice, based upon the size of the system, the type/quality of the signal inputted/output and thus bares no patentable weight.

Based upon applicant's previous response, the examiner will incorporate Gowda (col 3, line 10-21) which discloses adding a LPF prior to outputting a signal is optional, thereby supporting the examiner's previous rejection that the addition of a LPF is not a patentable distinct feature, since it is notoriously well known to include LPF throughout a system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jiang/Taubman which disclose the use of a conventional kernel (matrix) LPF and a smoothing filter on the input to remove any unwanted signals/noise, with Gowda by optionally including a LPF at the output, to also remove any unwanted signals/noise which may have attached to the desired signal.

Allowable Subject Matter

4. Claims 4-6, 8-9, 16-18 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Yenke whose telephone number is (703) 305-9871. The examiner work schedule is Monday-Thursday, 0730-1830 hrs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, John W. Miller, can be reached at (703)305-4795.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703)305-HELP.

General information about patents, trademarks, products and services offered by the United States Patent and Trademark Office (USPTO), and other related information is available by contacting the USPTO's General Information Services Division at:

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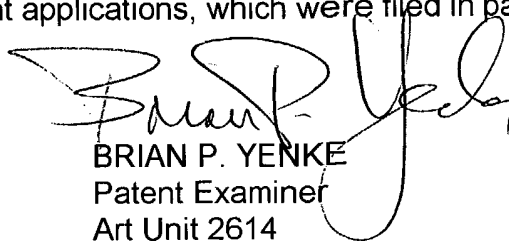
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BRIAN P. YENKE
Patent Examiner
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B.P.Y.

13 September 2004